

PROCEEDINGS OF LEARNED SOCIETIES.

ZOOLOGICAL SOCIETY.

June 22, 1847.—Harpur Gamble, Esq., M.D., in the Chair.

ON THE PORCUPINES OF THE OLDER OR EASTERN CONTINENT, WITH DESCRIPTIONS OF SOME NEW SPECIES. BY J. E. GRAY, Esq., F.R.S., F.Z.S. ETC.

This genus, on account of the similarity of the appearance of the species, has been very imperfectly examined. M. F. Cuvier, in the eleventh volume of the 'Mémoires du Muséum,' has given a paper on the crania and teeth of the family, and divided them into genera, forming those of the old world, which alone came within the scope of this communication, into two: the first he calls *Hystrix*, and figures as the type a skull which he considers as that of the *Porcupine of Italy*; and formed a second genus under the name of *Acanthion* for a skull brought by Leschenault from Java, and a skeleton described by Daubenton (Buffon, H. N. xii. t. 53) in the Paris Museum. He gives a general description and some observations on the relative size of the face and brain-cavity, rather than a character for these genera, and no distinctive character by which the two species of the genus *Acanthion* can be recognized.

The Baron Cuvier does not take any notice of the genus *Acanthion* in the second edition of the 'Règne Animal' (i. 215), but merely observes that the Indian and African species have their heads less swollen; but he formed for the *fasciculated Porcupine* (*H. fasciculata*) a genus under the name of *Atherura*, characterized by the muzzle not being swollen, and the tail elongated and not prehensile. Some authors, as Fischer (Synopsis Mam. i. 267, ii. 602), have considered this animal as the one on which F. Cuvier established his genus *Acanthion*. See on this subject the excellent remarks of Mr. Bennett on the gardens and menageries of the Zoological Society, i. 176.

J. F. Brandt, in the 'Mémoires de l'Académie Impériale des Sciences de Saint Pétersbourg' for 1835, on the Rodent in the museum of that Academy, has also overlooked M. F. Cuvier's genus, and he observes, "The genus *Acanthion* of F. Cuvier I add to the genus *Hystrix*, on account of the resemblance of the cranium of *H. hernitorostris* with that of *Acanthion Daubentonii*. G. Cuvier, although he proposed the new genus *Atherura*, does not say a word respecting *Acanthion* in the new edition of the 'Règne Animal'; and I should almost conclude from his words under the genus *Hystrix* (i. 215),—'there are (in the genus *Hystrix*) species with the head less swollen;' that he himself regarded the quotation *Acanthion* and *Hystrix* as one and the same."—*Mém. Acad. Pétersb.* 1835, 267, note.

I may here remark, that the skull figured by M. F. Cuvier as that of the *Italian Porcupine* does not agree with our specimen of the skull of the European species, and belongs to what I have considered the genus *Acanthion*, as I keep the name of *Hystrix* for the old Linnæan species *H. cristata*: that the skull figured by Brandt as a new species, under the name of *Hystrix hernitorostris*, does agree with our specimen from Xanthus, which I regard as the European species; and

though he compares it in the note above quoted with F. Cuvier's figure of the genus *Acanthion*, it differs from that figure in most important characters; while the skull which Brandt figures for that of *Hystrix cristata* very nearly resembles F. Cuvier's figure above referred to, which represents, according to the characters pointed out in this communication, what I regard as the genus *Acanthion*.

Having had the opportunity of comparing the various skulls and skeletons of the species of this genus contained in the British Museum with the skulls of the Indian species in the collection of Colonel Cautley, and with the three skulls in the collections of the Zoological Society, I have been induced to make the following communication to the Meeting, as containing the results of this examination, and with the hope of calling the attention of the Members to the necessity of further attention to this hitherto neglected genus. These skulls form themselves into three groups, and that I may not encumber science with new names, I have used the three already proposed by the brothers Cuvier, though the characters I have given for the genus *Acanthion* may not be such as M. F. Cuvier had in his mind when he formed the division.

Synopsis of the Genera.

I. *Tail short; skull convex above; the nasal and intermaxillary bones large to (or to behind) the front edge of the orbit; the (upper) grinders all with a fold on the inner side.*

1. **HYSTRIX.** The intermaxillary broad and truncated, and as wide behind as before. The grinders oblong, longer than broad, with one very distinct fold on the inner and three or four on the outer side.

2. **ACANTHION.** The intermaxillary triangular, tapering behind; the grinders subcylindrical, not longer than broad, with a distinct fold on the inner and two or three on the outer side.

II. *Tail elongate, tufted at the end; skull nearly flat above; the nasal and intermaxillary bones short, not nearly reaching to the front of the orbits. Intermaxillary narrow, truncated behind; the front (upper) grinders (and perhaps all but the last) without any fold on the inner side.*

3. **ATHERURA.**

1. **HYSTRIX.**

Tail short; crown and nape crested; spines subcylindrical, striated; the skull very wide, swollen, convex above; the nasal and intermaxillaries large, reaching to the line even with the front edge of the orbit. The intermaxillaries very large, broad, oblong, as wide behind as before, and truncated behind; the palate wide between the grinders; the grinders oblong, longer than broad. The development of the face is produced by the dilatations of the hinder part of the intermaxillary bones.

1. **HYSTRIX CRISTATA**, Linn., &c. (*Crested Porcupine*).

H. hirsutirostris, Brandt, *Mém. Pétersb.* 1835, 375, t. 8. f. 3—6.

Black; spines of the sides greyish, softish, subcylindrical; of the back thick, tapering, with several black rings and a moderate white

tip. The upper part of the intermaxillary wider than the width of the nasal. Skull very convex and wide, the palate wider than the width of the teeth.

Inhab. South Europe and Africa.

The spines are described from a specimen from South Africa, presented to the Museum by Dr. W. Burchell, and the skull, from that of an Italian specimen, received from a menagerie, and a young skull with only three grinders, brought from Xanthus and presented to the British Museum by G. Scharff, Esq.

The skull figured by Brandt, *Mém. Acad. Pétersb.* 1835, t. 8. f. 3, 4, 5, 6, as that of his *Hystrix hirsutirostris*, well represents the skull of the young *H. cristata* from Xanthus.

The skull of the Italian porcupine figured by F. Cuvier, and of *H. cristata* figured by Brandt, do not belong to the species above described.

2. HYSTRIX LEUCURUS, Sykes, *Proc. Zool. Soc.*, (*Indian Porcupine*).

Hystrix cristata, Bennett, *Gard. & Menag. Zool. Soc.* 171: fig. good.

Black; spines of the throat white-tipped (forming a half-collar); of the sides rigid, angular, of the back very long, slender, with several black rings, and a very long, slender, white tip. Skull elongate, rather narrow; the hinder part of the intermaxillary as wide as the nasal. The palate narrow, not wider than the width of the teeth.

Inhab. Bombay. Dukhun, Colonel Sykes. Nepal, B. H. Hodgson, Esq., N. India.

The above description is taken from two adult and one young specimens in the British Museum,—one presented by Colonel Sykes and the others by B. H. Hodgson, Esq.,—two skulls from Mr. Hodgson's specimens, three skulls from Colonel Cautley's collection, and a skull in the museum of the Zoological Society.

The young skull, which has three well-developed and worn grinders, is the same length as the young skull of *H. cristata* from Xanthus, which has the third grinder partly developed. The Nepal skull is much less swollen, less convex above, and nearly one-third narrower, and the teeth are smaller, occupying about one-fourth less space than the three teeth in the European skull.

I may observe, that though these skulls preserve a very distinct character, yet they vary so much amongst themselves as to show that skulls afford no better character for the distinction of species than any other single character, such as colour, but can only be depended on when taken in connexion with the rest of the organization.

In Colonel Cautley's collection there are three adult skulls (nos. 32, 34, 35) of this species from Northern India; they agree nearly in size and in the comparative width of the intermaxillary and nasal bones; one differs from the other two considerably in the width between the orbits, and slightly in the convexity of the frontal line. They are all much larger than Mr. Hodgson's specimen from Nepal.

No. 34 is peculiar for having a fifth grinder appearing behind the fourth on the left side above.

This species is easily known by the very elongate slender spines

of the back and by the form of the intermaxillary, though they are subject to some variation.

The figures by Harvey published by Mr. Bennett above-quoted well represent the elongated drooping dorsal spines of this species.

Measurement of the Skulls in inches and lines.

	H. cris- tata.	H. cris- tata.	H. leu- curus.	H. leu- curus.	H. leu- curus.	H. leu- curus.	H. leu- curus.
	Adult.	Junior.	No. 32.	No. 34.	No. 35.	Adult.	Junior.
Length of skull above.....	5 7	4 0	5 10	5 8	5 11	5 0	4 0
Length of nasal	2 8 $\frac{1}{2}$	1 9	3 0 $\frac{1}{2}$	2 8 $\frac{1}{2}$	2 11	2 5 $\frac{1}{2}$	1 9 $\frac{1}{2}$
Width at middle of orbits	2 3	1 11	2 5	2 3	2 6	2 1	1 7
Width of nose in middle...	1 10	1 4 $\frac{1}{2}$	1 10	1 9	2 0	1 11	1 2 $\frac{1}{2}$
Width of lower edge of zygoma	2 7	2 2	2 11	2 11	2 9	2 7	2 0
Lower edge of zygoma to central suture .....	.....	.....	2 11	2 7	2 10	2 4	
Palate to middle of crown end of nasal .....	.....	.....	2 7	2 2 $\frac{1}{2}$	2 5	2 1	
Length of skull beneath ...	5 10	4 2	6 2	5 7 $\frac{1}{2}$	6 0	5 3	4 1
Length of palates	3 2	2 2	3 3	3 0 $\frac{1}{2}$	3 2	2 10	2 0 $\frac{1}{2}$
Length of grinder series ...	1 5	1 5	1 4 $\frac{1}{2}$	1 3 $\frac{1}{2}$	1 5	1 3	0 10 $\frac{1}{2}$
Length of lower jaw	3 10	2 11	4 2	4 2 $\frac{1}{2}$	.....	3 8	2 11
Width at ear-bones	2 1	1 11	2 3	2 1	2 2	1 11	1 8
Width at condyles	1 2	1 0	1 2	1 2 $\frac{1}{2}$	1 2	1 3	1 0
Height of occiput from foramen .....	.....	.....	1 3 $\frac{1}{2}$	1 2	1 3	1 2	

2. ACANTHION.

Tail short; crown and nape not crested. Spikes short, flattened and channeled above. Skull rather elongate, convex above; the nasal and intermaxillary reaching to the line even with the front, or even to the middle of the orbit; the intermaxillaries triangular, narrowed behind; the palate moderately wide between the grinders; the grinders subcylindrical, not longer than broad.

F. Cuvier established his genus *Acanthion* on a skull and skeleton in the Paris Museum. He gave as the character the less convexity of the head and the smaller size of the nose; but he takes no notice of the size and form of the intermaxillary, which appears to be the best character of the group.

M. G. Cuvier and Brandt have not adopted M. F. Cuvier's genus.

This genus presents two very distinct sections:—

* *The nasal very long, broad to the middle of the orbit.* ACANTHION.

† *Malar bone simple. Palatine opening parallel.*

1. ACANTHION HODGSONII, n. s. *Lesser Indian Porcupine.*

Crown and nape without any crest. Blackish brown, neck with a very narrow indistinct white collar. Spines of the head and neck slender, bristle-like; of the front half of the body short, angular, acute, with a deep groove; of the hinder part of the back longer, with a very small pale tip and some white ones; some of the latter are moderately long and thick, with a black end; and others are longer and slenderer, with a subcentral black band. Skull rather elongate, narrowed before the orbit; the intermaxillaries very narrow, and rather

acute behind. Palatine opening narrow and nearly parallel. Malar bone moderately wide, and rather gradually narrowed behind. The nasal holes large; the front end of the nasal over the base of the upper cutting-teeth.

Inhab. India. Nepal; B. H. Hodgson, Esq.

The spinous process of the second cervical vertebra is very large and recurved; of the first dorsal is shorter than the second or others; the ribs are 15·15, very broad and large. The caudal vertebræ are deficient.

This species is described from a half-grown specimen and its skull, and a skeleton of an adult animal from Nepal, presented to the British Museum by B. H. Hodgson, Esq.

†† *Malar bone with a deep notch behind. Palatine opening diverging.*

2. ACANTHION CUVIERI, n, s.

Porc epic d'Italie, *F. Cuv. Mém. Mus.* ix. t. 20*. f. 1. Skull.

Hystrix cristata, *Brandt. Mém. Pétersb.* 1835, t. 8. f. 1, 2. Skull.

Black? Spines? Skull very convex above, very wide over and before the orbits. The hinder part of the intermaxillary rather broad, and rounded at the end. The palatine openings wide, and diverging from each other behind. The malar bone very broad in front, narrow behind. The nasal hole very large; the front edge of the nasal far back behind the base of the cutting-teeth.

Inhab. —? *Mus. Zool. Soc.*

This species is described from an adult skull, with the hinder part of the upper surface cut away, which is contained in the museum of the Zoological Society. It agrees in almost every particular with the skull figured by Brandt and F. Cuvier as that of the *European Porcupine*. Brandt's figure is just half, and Cuvier's rather more than half the size of this specimen. Brandt's figure is most characteristic, both in the posterior position of the nasal bone and the notch in the lower edge of the orbit produced by the sudden narrowing of the malar bone.

** *Skull narrower in front. Nasal bone moderate to the front edge of the orbits. Malar bone with an obtuse post-orbital process.*

ACANTHERIUM.

3. ACANTHION JAVANICUM. *Short-spine Porcupine.*

Acanthion javanicum, *F. Cuvier, Mém. Mus.* ix. t. 1. f. 3, 4. From a skull; and *Mus. Leyden*.

Hystrix brevispinosus, *Wagner*.

H. torquatus. *Mus.* —?

Greyish black, throat with a large square white spot. Spines of the head elongate setaceous; of the front half of the body short, dark, with a deep groove and a white tip; of the hinder part of the back longer, more cylindrical, white, with a black tip and bands; of the under-side of the tail white; the sides with a few scattered, very slender, white spines. The palate narrowed behind. Condyles of

the skull small. Dorsal vertebræ thirteen, with thirteen pair of rather elongate slender ribs; the spinous process of the first dorsal vertebra as long as the second and following ones. The caudal vertebræ fifteen.

Inhab. India? Java?

There is a skin and skeleton of this species in the collection of the British Museum: it is a male which lived in the Surrey Zoological Gardens for ten or twelve years.

M. F. Cuvier established a species under the name of *Acanthion javanicum* on a skull from Java in the Paris Museum. In the Leyden Museum there are several specimens of this or the next species, which they regard as M. F. Cuvier's species. Neither M. Cuvier's nor my notes on the Leyden specimens enable me to distinguish to which the names belong.

While living in the Surrey Zoological Gardens it bred with a female of the Common Crested Porcupine, and produced a hybrid specimen, which, with its skeleton, is now in the British Museum collection. The animal is intermediate between the two species, having only a short compressed crest; and the skull is equally intermediate in character, having the broad palate and oblong teeth of *H. cristata*, and the more elongated form of the skull and the triangular intermaxillaries of the male parent.

4. ACANTHION FLEMINGII. *Square-spined Porcupine.*

The palate between the grinders narrow ($2\frac{1}{2}$ lines), and rather wider behind between the last grinders. Condyle of skull large.

The dorsal vertebræ fourteen, with fourteen pair of rather wide ribs; the spinous process of the first dorsal is nearly as long as the second and third; and of the second cervical is large and recurved. Caudal vertebræ seventeen.

Inhab. —? Skull in British Museum.

Measurement of Skulls in inches and lines.

	Acanthion Hodgsonii.		Acanthion Cuvieri.		Acanthion javanicum.		Acanthion Flemingii.		Hybrid.
	Adult.	Junior.	Adult.	Adult.	Adult.	Adult.	Adult.		
Length of skull above	4 7 $\frac{1}{2}$	4 2	5 6	4 6	4 6	4 6	4 6		
Length of nasals	2 6	2 3 $\frac{1}{2}$	2 9 $\frac{1}{2}$	1 10	2 1	1 10	1 10		
Width over middle of orbits.....	1 8	1 6	2 3	1 7	1 7	1 7	1 8		
Width of nose in middle	1 3	1 1	1 1 $\frac{1}{2}$	1 1 $\frac{1}{2}$	1 1 $\frac{1}{2}$	1 1 $\frac{1}{2}$	1 2 $\frac{1}{2}$		
Width of lower edge of zygoma .	2 3	2 0 $\frac{1}{2}$	2 11	2 0 $\frac{1}{2}$	2 0	2 1	2 1		
Width of lower edge of zygoma } to central suture .....	.....	1 9	2 5	.....	.....	1 10 $\frac{1}{2}$	1 10 $\frac{1}{2}$
Width of palate to middle of } crown end of nasals .....	.....	1 6 $\frac{1}{2}$	2 3	.....	.....	1 8	1 8
Length of skull beneath	4 8	.....	5 4	4 5	4 5	4 5	4 5	
Length of palate	2 5 $\frac{1}{2}$	2 1 $\frac{1}{2}$	2 11	2 3	2 3	2 3	2 3		
Length of lines of grinders	1 0	1 0	1 4	1 0	1 0	1 0	1 0 $\frac{1}{2}$		
Length of lower jaw	3 0	2 10	3 10	2 10	3 0	3 0	3 0 $\frac{1}{2}$		
Width at ear bulla.....	1 9	1 9	2 1 $\frac{1}{2}$	1 10	1 10	1 11	1 11		
Width of the condyles	0 11 $\frac{1}{2}$	.....	1 1 $\frac{1}{2}$	0 11 $\frac{1}{2}$	1 1 $\frac{1}{2}$	1 0	1 0	

We have a skeleton of this species, which was purchased of Mr. Bartlett as "*the Square-spined, not Crested Porcupine,*" but unfortunately the skin was not preserved.

I ought in justice here to remark, that Edward Gerrard, who has the preparation and the care of the skeletons in the British Museum collection, and Mr. Bartlett both informed me there were osteological distinctions between these very distinct species.

3. *ATHERURA, Cuvier.*

Tail elongate, tapering, ending in a tuft of peduncled, compressed spines. Skull elongate, rather suddenly narrowed in front, rather depressed and flattened above. The nasal moderate, not reaching to the front edge of the orbit. The intermaxillary rather narrowed behind, square at the hinder end. The malar bone broad in front, subtriangular, very narrow behind. The palatine foramen rather far apart, linear and rather diverging behind. The grinder subcylindrical. The upper front one with two large folds on the outer side, reaching nearly to the inner edge, and with a smaller fold on middle of the outer, and three similar folds on the hinder edge; the other upper grinder with two grooves or folds on outer edge, and one on the middle of the inner: these grooves become isolated, oblong rings of enamel as the teeth become more worn: the fold on the inner side of the last grinder is most distinct. Palate truncate behind.

1. *ATHERURA FASCICULATA, Cuv.*

Landak, *Marsden*, Hist. Sumatra. *Raffles.*

Hystrix macroura, Linn. From *Seba.*

Hystrix fasciculata, Shaw. From *Buffon.*

Inhab. Sumatra, *Raffles*; Malacca, *Buffon*; Celebes, *Seba.*

2. *ATHERURA AFRICANA.* *Ath. fasciculata, "Cuv.," Bennett, Garden and Menag. Zool. Soc. 175.*

Inhab. Fernando Po, Lieut. Vidal; Sierra Leone, Mr. Frazer.

Skull, without lower jaw, in collection of Zool. Soc.

	in.	lin.
Length of skull above	3	9
Length of nasal	0	11
Length of palate	2	2
Length of teeth-line	0	10
Width at orbit	1	3½
Width at zygoma beneath	1	9
Width of valve	0	4
Width at ear bulla	1	6½
Width of condyles	0	11

"The animals are found in such plenty (in the colony of Fernando Po) as to afford a staple article of food to the inhabitants."—*Bennett, l. c. 175.*